SERVICE MANUAL
HYDROSTATIC LEVEL TRANSMITTER MEMPRO S6.3

Safety Precautions

- Installation, initial start-up and maintenance may only be performed by trained personnel! All applicable European and national regulations regarding installation of electrical equipment must be adhered to.
- The device may only be connected to supply power which is rated as specified in the technical data!
- The device must be disconnected from all sources of power during installation and maintenance work!
- The device may only be operated under the conditions specified in the operating instructions!

Functions Description

The MEMPRO S6 back pressure sensor functions in accordance with the **pitot-static principle**, i.e. current fill-level is derived on the basis of hydrostatic pressure measured in a tube submerged in the liquid.
The device is adapted to tank dimensions on-site in just a matter of seconds by means of an **automatic calibration function**.
Four limit value switching points can be assigned to the fill-level range via the setup menu.
All switching points feature **adjustable delay time**, **adjustable hysteresis** and **selectable NC/NO function**.

The MEMPRO S6.3 should be connected to an optionally available vent for tank contents with widely varying temperatures, or for adhesive or outgassing media. Clock generator control is integrated into the measuring electronics.

Technical Data

Supply power:
24 V DC (9 to 36 V DC is possible)
Connected load:
Approx. 1 VA
Ambient temperature:
-20 to +60°C
Output relays:
3+1 floating limit value contacts
3 with common root
1 floating contact can be selected as a limit value contact,or as a clock generator output (can be switched back and forth between NC and NO function).
Output relay switching capacity:
250 V AC, 2.0 A / 30 V DC, 1.0 A
***Caution**: Contacts are not protected against overload – use external protective device!*
Terminal housing:
PBT, fibre-glass reinforced, IP 65 per EN 60 529
Terminals:
Screw terminals, max. 1.5 square mm
Measuring cell:
Ceramic diaphragm, with EPDM-sealing *)

***) Attention!:**
Use this device only in media, which the EPDM-sensor-sealing is persistent.
In media, which EPDM has only limited persistency please take care that the sensor never contacts the media.

Technical Data (continuation)

Measuring accuracy:
0.5% ± 0.5 digits
Display resolution:
1%
Reset hysteresis:
Adjustable from 1 to 99%

Indicators:
3-digits, 7-segment LED display
4 LEDs = limit value relays
Settings:
Rotary switch and pushbutton
Areator connection:
To connect a hose (such as PVC 4x1mm) or for a air pressure connection with G1/4“-winding

CE Mark

In accordance with low-voltage directive (2006/95/EG), EMC directive (89/336/ECC)

Maintenance

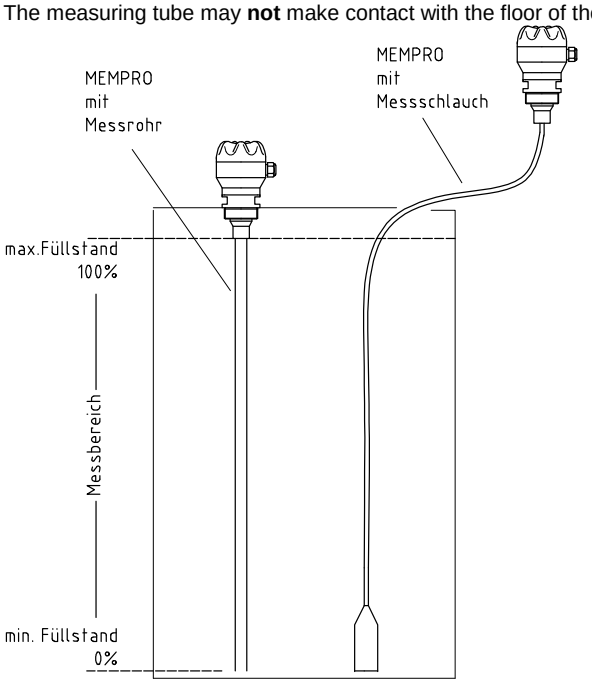
The MEMPRO S6.3 back pressure sensor is maintenance-free if used for its intended purpose. If used in highly adhesive liquids (e.g. calcium suspensions), the measuring tube or hose must be inspected at regular intervals and cleaned if necessary.

Mechanical Installation

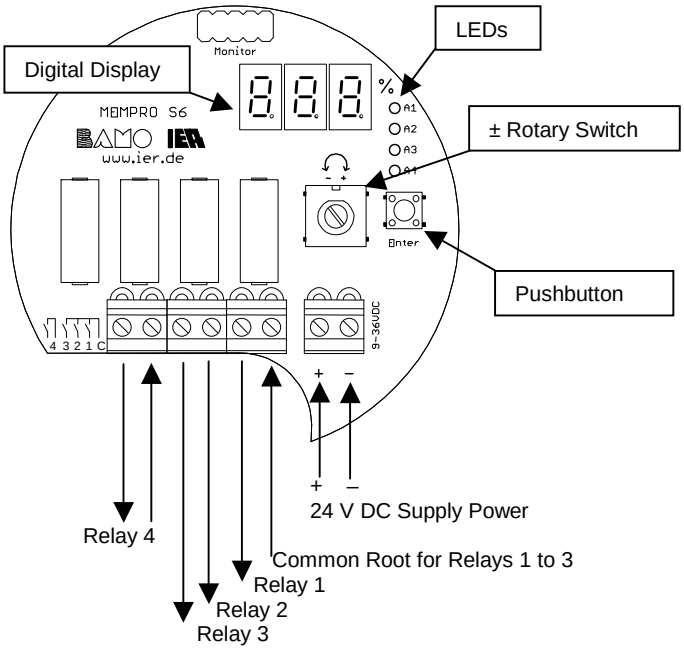
The MEMPRO S6.3 back pressure sensor can be attached to containers and tanks in two different ways:

- With the measuring tube immersed into the tank from above
- With the measuring hose immersed into the tank from above, and with the transducer mounted in close proximity to the tank

Please observe the following points!
The bottom end of the measuring tube or measuring hose corresponds to the 0% fill-level measuring point.
The measuring tube may **not** make contact with the floor of the tank, nor may it be immersed into bottom sludge!



Electrical Connection



Controls

± rotary switch
The desired relay (1 through 4), is selected in menu level 1.
The desired values are selected in menu levels 2 through 6.
Pushbutton:
For selecting the submenus

Output Relays A1 through A4

LED lights up = relay pulled in = contact closed

Limit Value Switching Points

Setting range: 2 to 100%
Relative to the selected 100% fill-level
Default settings: A1 = 80%, A2 = 60%, A3 = 40%, A4 = 20%*

Delay Time

Adjustable from 0.1 to 9.9 seconds
After the selected limit value is violated, delay time is allowed to elapse and the relay is then switched.
Default setting: 0.1 seconds

Hysteresis

Setting range: 1 to 99%
The output relay is not switched back until the measured value is fallen **short of** by the selected percentage value.
Default setting: 1%

NC-NO Selection

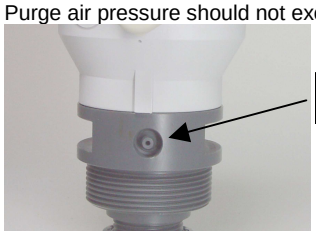
NO = normally open = contact is **open** as long as the actual fill-level is **less** than the selected limit value.
NC = normally closed = contact is **closed** as long as the actual fill-level is **less** than the selected limit value.
Default setting: NO
Note:
All relays are open in the event of power failure.

Overranging Display

Measuring signal > 105% value	→ digital display = ⊓⊓
Measuring signal < -5% value	→ digital display = uu
No signal from sensor	→ digital display = Err

Clock Generator (* for air supply control)

The aerator hose could be connected to the connection with is under the silver label. The hose connection is suitable for a PVC-hose Ø 4x1 mm. Purge air pressure should not exceed a level of 2.5 bar.



Aerator Connection

The clock controls are integrated into the electronics, and relay 4 is used to connect, for example, a solenoid valve.

Setting the clock generator:

Set pump-time (on-time) such that air bubbles are discharged from the **bottom** end of the measuring tube for 3 to 5 seconds (depending upon the length of the measuring tube and the air supply tube) during each pumping operation!

Off-time:

In the case of liquids which may plug the tube with sediment, pumping should be activated as required.

Measured value drift is reduced by means of frequent pumping if the liquid is subject to temperature fluctuations.

Pumping for a duration of approximately 30 seconds once or twice a day is adequate for most applications. By using the clock Generator for air supply control it is recommended to use the hold-function

The clock generator is switched on as soon as **on and off-time is set to a value of greater than 0**.

*) Setting values for **limit value** relay A4 are rendered inactive as a result.

On-Time

The contact at relay 4 remains closed as long as the selected on-time has not yet elapsed.

Setting range: 1 second to 24 hours

Available setting values:

0*, 1, 2, 5, 10, 30 s = **no** decimal point is illuminated

1, 2, 5, 10, 30 min. = the **right** decimal point is illuminated

1, 2, 3, 6, 12, 24 hours = the **left** decimal point is illuminated

Default setting: 0

Off-Time

The contact at relay 4 remains open as long as the selected off-time has not yet elapsed.

setting values same as above

Default setting: 0

Note:

After power failure, the device is rebooted and the program starts with on-time.

If on or off-time is changed during operation, the new on or off-time becomes immediately effective.

Hold-function

In the timer menu there can be activate a hold-function. With this feature it is possible to hold the measure value during the aeration time until the aeration ends.

Available setting values:

Hof: hold-function disabled

Hon hold-function enabled

The hold-function is not working if one of the timer settings set to 0.

Initial Start-Up

Automatic setting of the 100% fill-level:

This 100% level can be adapted to on-site conditions with the help of the setup menu.

1 Install the MEMPRO S6 to the tank.
→ The measuring tube may **not** make contact with the floor of the tank, nor may it be immersed into bottom sludge!
2 Fill the tank to a level of between **50 and 100%** (it's best to fill the tank to the 100% level).
3 Switch supply power on.
4 Wait approximately 10 seconds until the device is ready for operation.
5 Press and hold the pushbutton for **3 seconds** until the digital display starts blinking.
6 Select the actual fill-level percentage with the **±** rotary switch.
7 Press the pushbutton once again, **or** wait for 10 seconds until the digital display stops blinking.
The device calculates the 100% fill-level and save it to memory.

Attention!
The measuring tube or hose may not be shortened indiscriminately! It may not be any shorter than **20%** of the maximum measuring range!

Measuring Cell Type	Measuring Range	Minimum Hose / Tube Length
Type 1	0 to 1000 mm WG	200 mm
Type 2	0 to 2500 mm WG	500 mm
Type 4	0 to 4000 mm WG	1000 mm

Measuring cell type → see serial plate
Example:

MEMPRO	S6	R	1	2	X	L = 1800 m

Setting Limit Value Switching Points A1 through A4

1. Press the pushbutton once until **A1** is displayed.
LED **A1 blinks.**
2. Press the pushbutton once again.
3. Set limit value **switching point 1** with the rotary switch
(0 to 100%, default setting: 80%).
4. Press the pushbutton once again.
5. Set **delay time**.
6. Press the pushbutton once again.
7. Set **hysteresis**.
8. Press the pushbutton once again.
9. Select **NC** or **NO** function.
10. Press the pushbutton once again.
11. **Return** to menu level 1.

All other values can be selected and adjusted in the same way (see **"Setup Menu" graphic**).

Limit value switching points A1 through A4 and the clock generator are selected in menu level 1 (press the pushbutton once) with the **± rotary switch**.

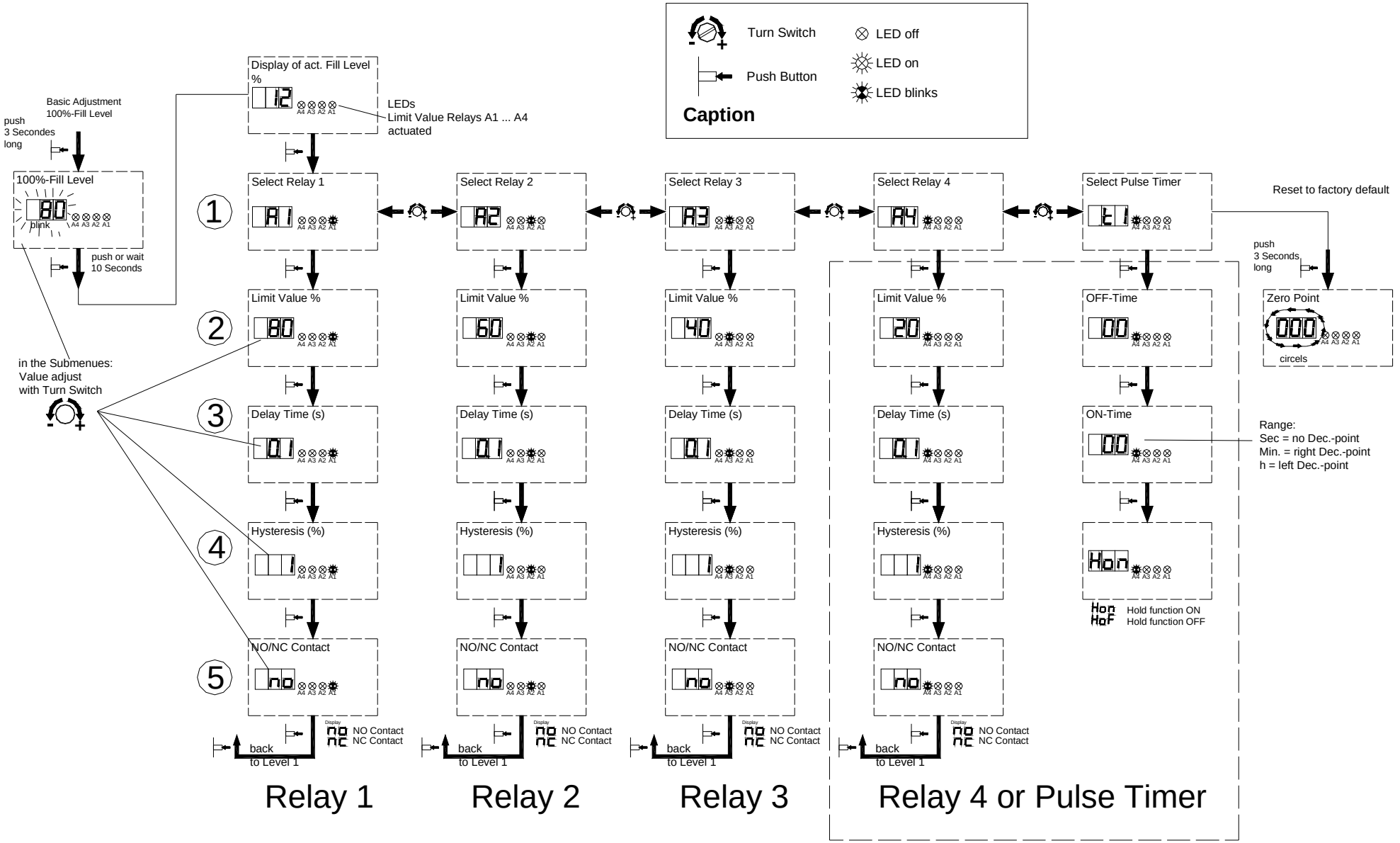
If none of the controls are activated for **more than approximately 10 seconds**, the display is returned to the current fill-level and the setting values are saved to memory.

Reset to Default Settings

Switch supply power on.
Within 3 seconds (i.e. during the test routine), press and hold the pushbutton for approximately 5 seconds:
The display counts up: 1, 2, 3, 4 ... 99, Std....
→ All settings are returned to their default values.

Zero point calibration

Remove the MEMPRO S6 or empty the tank entirely. Press and hold the pushbutton for approximately 3 seconds while in menu "t1" until the LED display gives "rotating lights".


Caption
Turn Switch
Push Button
LED off
LED on
LED blinks
Display of act. Fill Level %
LEDs
Limit Value Relays A1 ... A4
actuated
Basic Adjustment
100%-Fill Level
push
3 Secondes
long
100%-Fill Level
blink
push or wait
10 Seconds
Select Relay 1
Select Relay 2
Select Relay 3
Select Relay 4
Select Pulse Timer
Reset to factory default
push
3 Seconds
long
Zero Point
circels
1
2
3
4
5
Limit Value %
Delay Time (s)
Hysteresis (%)
NO/NC Contact
OFF-Time
ON-Time
in the Submenues:
Value adjust
with Turn Switch
Range:
Sec = no Dec.-point
Min. = right Dec.-point
h = left Dec.-point
Hon Hold function ON
HoF Hold function OFF
NO Contact
NC Contact
back
to Level 1
Relay 1
Relay 2
Relay 3
Relay 4 or Pulse Timer